

## CLAIMS

What is claimed is:

1. Apparatus for hot blow-forming an article from a blank of sheet metal wherein one side of the blank becomes a visible surface of the article and a back side of the blank is pushed into contact with a forming surface, said apparatus comprising a form tool assembly having said forming surface thereon, said form tool assembly including a form tool body at least partially defining said forming surface and further including a form tool insert positioned within said form tool body and at least partially defining said forming surface, said form tool insert and said form tool body defining at least one gap therebetween into which said blank is pushed by blow-forming pressure, said form tool insert and said form tool body having projections on either side of said at least one gap, whereby said projections provide resistance to draw-in of said blank into said at least one gap and produce raised portions on said visible surface of said article for a subsequent material removal operation to provide a finish surface not reflective of said at least one gap.
2. An apparatus as claimed in claim 1, wherein said projections are arc-shaped in cross section.
3. An apparatus as claimed in claim 1, wherein said projections are rectangular-shaped in cross section.
4. An apparatus as claimed in claim 1, wherein said form tool insert is an ejector pad.

5. An apparatus as claimed in claim 1, wherein a ratio of the height of said projections to the thickness of the blank of sheet metal is less than 0.5.

6. An apparatus as claimed in claim 5, wherein said ratio is between 1 to 10 % of the width of said at least one gap.

7. Apparatus for hot blow-forming a sheet metal panel from a blank of sheet metal between opposing tools wherein one side of the blank becomes a visible surface of the sheet metal panel and a back side of the blank is pushed into contact with a forming surface, said apparatus comprising at least one of said opposing tools including a form tool assembly having the forming surface thereon, said form tool assembly comprising:

a form tool body at least partially defining said forming surface, said form tool body having at least one recess therein; and

at least one form tool insert at least partially defining said forming surface of said form tool assembly and being positioned within said at least one recess of said form tool body, wherein a gap is defined between said at least one form tool insert and said form tool body;

said at least one form tool insert having a projection adjacent said gap that projects beyond said forming surface;

said form tool body having a projection adjacent said gap that projects beyond said forming surface;

wherein said projections of said at least one form tool insert and said form tool body create a raised portion on said sheet metal panel that corresponds to said gap, further wherein said raised portion may be removed flush to said visible surface of said sheet metal panel.

8. An apparatus as claimed in claim 7, wherein said projections are arc-shaped in cross section.

9. An apparatus as claimed in claim 7, wherein said projections are rectangular-shaped in cross section.

10. An apparatus as claimed in claim 7, wherein said form tool insert is an ejector pad.

11. An apparatus as claimed in claim 7, wherein a ratio of the height of said projections to the thickness of the blank of sheet metal is less than 0.5.

12. An apparatus as claimed in claim 11, wherein said ratio is between 1 to 10 % of the width of said at least one gap.

13. A method of producing a sheet metal panel from a blank of sheet metal wherein one side of the blank becomes a visible surface of the article and a back side of the blank is pushed into contact with a forming surface, said method comprising:

forming a surface of said blank of sheet metal against a form tool body that at least partially defines a forming surface;

simultaneously forming said surface of said blank of sheet metal against at least one form tool insert that also at least partially defines said forming surface and that is positioned within said form tool body, wherein a gap is defined between said at least one form tool insert and said form tool body;

providing a projection on said at least one form tool insert adjacent said gap that projects beyond said forming surface;

providing a projection on said form tool body that projects beyond said forming surface;

wherein said projections create a raised portion on said sheet metal panel that corresponds to said gap during said forming steps; and  
removing said raised portion flush to said visible surface of said sheet metal panel.